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Review on: Technology used in Agriculture based mobile application

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Abstract – *India is primarily an agriculture-based growing country. The intensive agriculture sector is upgraded by mobile-enabled info services and the rise of the mobile telephone. Moreover, farming apps are the foremost convenient and helpful medium to guide farmers in farming. Farmers will currently use one thing as easy as their smartphones to receive relevant info, and timely updates, and monitor their crops. additional farmers are getting down to perceiving however investing in solutions that use the most recent technologies like Machine Learning (ML), Artificial intelligence (AI), and Cloud offers them bigger climate resilience, higher crop yield, and higher control. A farming app will be the simplest friend for farmers in farming which might enhance their productivity while not disbursal millions of cash. Anyone can simply download it from the Google play store or app store while not paying one rupee. There are so many mobile-based android applications built by different companies and individuals*.

Key Words: Agriculture, Artificial intelligence (AI), Machine Learning (ML), Cloud, Android, etc.

1. INTRODUCTION

The Indian agricultural sector contributes nearly 18% of the GDP (gross domestic product) and 40 percent of the complete rural NDP (Net Domestic Product). Despite the agriculture sector's contribution to economic growth, the Indian farming sector still faces a range of challenges. These range from issues like low productivity to lack of access to finance and global climate change. With the increasing technological use in India, today's technology can address so many challenges that farmers face for example soil issues, irrigation, climate change, supply chain gaps, etc. It can help them a more accurate prediction of weather patterns, reduce wastage, and adopt more sustainable irrigation practices, in turn, enjoy better yields and better incomes. The use of modern digital technology like sensors, robotics, GPS, and satellites is changing the face of Indian agriculture and making the farming sector smarter. As per the Niti Aayog, AI and IoT in agriculture are anticipated to grow at a rate of 22.5 percent CAGR perhaps visiting be valued at $2.6 billion by 2025. The impact of global climate change on the agriculture sector has been more pronounced in the past few years. According to the Indian government's Economical survey (2018) effect of climate change led to an annual loss of 9-10 billion dollars. For making farming more accurate and delivering more precise outcomes precision agriculture uses IoT-based approaches so farmers can make informed decisions. To make it more efficient, both in terms of resource utilization and cost, it utilizes deep data on specific locations and crops to optimize processes. Several mobile applications have been developed, **Kisan Suvidha, IFFCO Kisan Agriculture, Pusa Krishi, Kheti-Badi,** etc. are a few examples of it. This paper deals with the analysis of available Android-based applications that are useful for farmers.

1.1 The technology used in these applications

Modern technology and its advancement are taking part in a significant role to create a convenient mobile application for farmers. jQuery mobile, flutter, java & XML, AI & machine learning, etc are some basic programming languages to make android applications. Numerous applications exist on the play store and different platforms, here is a synopsis of the technology that's being used for building those applications.

I. RFID Technology

The soil and water sensors have set a foundation for traceability. The industry has solely begun to appreciate this infrastructure, however, it's taking form quickly. These sensors give info that may be related to farming yields. it may seem like fantasy, however, we're living in a world wherever a bag of tomatoes will have a barcode that you just can scan along with your phone to access info concerning the soil that yielded them. A future where farms will market themselves and have loyal customers track their yields for purchase isn't far.

II. Sensors for Soil and Water

These sensors are sturdy, unnoticeable, and comparatively cheap. Even family farms are finding it reasonable to distribute them throughout their land, and they give various advantages. as an example, these sensors will discover wetness and element levels. The farm will also use this info to see once to water and fertilize instead of considering a planned schedule. That ends up in additional economical use of resources and so lowered prices, however, it conjointly helps the farm be additional environmentally friendly by protecting water, limiting erosion, and reducing chemical levels in native lakes and rivers.

III. Satellite Imaging

As remote satellite imaging has become additionally refined, it's allowed for real-time crop pictures. Even reviewing pictures each week will save a farm significant time and cash. in addition, this technology will be integrated with the crop, soil, and water sensors so the farmers will receive notifications alongside satellite pictures once danger thresholds are met.

IV. Weather following functions

There are online weather services that focus completely on agriculture, and farmers will access these services on dedicated aboard and hand-held farm technology however conjointly via mobile apps that run around any client's smartphone. This technology will provide farmers with enough advanced notice of frost, hail, and different weather that they will take precautions to guard the crops or a minimum mitigate losses to a major degree.

1.2 Android

Android is a major and essential open-source development platform that is used by developers to build very powerful applications. The Android operating system is a stack of software components that is approximately divided into five sections Application Framework, Applications, Libraries, Android Runtime, Linux Kernel, and four main layers. It helps the developers to take free advantage of access location information, device hardware, run background services, call divert and SMS, etc. Once the application has been published, it can download from third-party sites or through online stores such as App Store, play-store, etc.

2. DIFFERENT USES OF APPLICATION IN DIFFERENT AREAS OF AGRICULTURE

We survey some android apps in different areas of agriculture. We found that all apps are having different features. The Kisan Suvidha app was launched by PM Narendra Modi in 2016 to work towards the empowerment of farmers and the development of rural areas. The IFFCO Kisan Agriculture app was Launched in 2015 and managed by IFFCO Kisan, it is a subsidiary of Indian Farmers Fertilizer Cooperative Ltd. it aims to assist Indian farmers to build informed selections through customized information related to their needs, alternative activities cannot do by this app. The Pusa Krishi Is a government app launched in 2016 by the Union Agriculture Minister and aims to assist farmers to get information about technologies developed by Indian Agriculture Research Institute (IARI), which can facilitate increased returns to farmers. The 'Kheti-Badi' is a social initiative app that aims to push and support 'Organic Farming' and provide vital information/issues associated with farmers in India, this app is currently only available in four languages (English, Hindi, Gujarati, and Marathi).

Table -1:

App Name	Usages
Kisan Suvidha	The app presents records on cutting-edge climate and the forecast for the subsequent 5 days, marketplace costs of commodities/vegetation withinside the nearest town, know-how on fertilizers, seeds, machinery, etc.
IFFCO Kisan Agriculture	The user will access a range of informative modules as well as agricultural informatory, weather, market costs, and agriculture data library within the sort of text, imagery, audio, and videos within the designated language at the identification stage. The app additionally gives helpline numbers to get in contact with Kisan Call Centre Services.
RML Farmer- Krishi Mitr	This app is useful for farmers they'll carry on with mandi costs and the most recent goods, weather forecasts, precise usage of pesticides and fertilizers, farmer-related news and farm, and informatory. Moreover, it conjointly provides agricultural recommendations and news relating to the government's agricultural policies and schemes. it's designed with specific tools to investigate or give data on completely different aspects of farming habits.
Pusa Krishi	It aims to assist farmers to induce data concerning technologies developed by Indian Agriculture Research Institute (IARI), which can facilitate increasing returns to farmers. The app additionally provides farmers with data associated with new crops developed by the Indian Council of Agriculture analysis (ICAR), resource-conserving cultivation practices, and farm machinery. Its implementation can facilitate increasing returns to farmers.

Agri App	It's a complete farmer-pleasant app that offers whole records on Crop Production, Crop Protection, and all applicable agriculture allied services.
Crop Insurance	It's an awesome app that enables farmers to calculate coverage rates for notified vegetation and presents facts on time limits and employer contacts for or her crop and location. It works as a reminder and calculator for farmers approximately their coverage.
Kheti-Badi	'Kheti-Badi' is a social initiative app that aims to push and support 'Organic Farming' and offer critical information/problems associated with farmers in India. This app helps farmers to change their chemical farming to organic farming.

3. CONCLUSIONS

Different apps are developed and utilized by farmers for specific purposes. All these apps have completely different usage as per their functionalities. several apps are being utilized for various practicality regarding the farming activities like cropping information, fertilizer, seed, pesticides, the mercantilism of crop, irrigation information, estimation of crop production, weather information, and knowledge regarding the foremost effective practices of farming. conjointly if all such listed functionalities are bundled into one single app and with the language of the farmers, then it's simple to utilize it. Despite so many smartphones and applications providing their services in India, research says that few farmers used their smartphones for agriculture purposes a recent study has found that just 2 percent of the cultivators in India use mobile applications for farm-related activities.

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BIOGRAPHIES

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